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| 10/015,768      | 12/17/2001  | Kie Jin Park         | P67414US0           | 4427             |

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EXAMINER

DUNCAN, MARC M

ART UNIT PAPER NUMBER

2113

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/015,768 | <b>Applicant(s)</b><br>PARK ET AL. |  |
|                              | <b>Examiner</b><br>Marc Duncan       | <b>Art Unit</b><br>2113            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status of the Claims***

Claims 1, 4, 8, 9, 11 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Harper et al. (2003/0036882).

Claims 2, 6, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper et al. (2003/0036882 – hereinafter Harper (I)) in view of Harper et al. (6,629,266 – hereinafter Harper (II)).

Claims 3, 5, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper et al. (2003/0036882) in view of Kumar et al. (6,789,213).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4, 8, 9, 11 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Harper et al. (2003/0036882).

Regarding claim 1:

Harper teaches collecting system state information (paragraph 0011, lines 5-6) about the number of primary servers to monitor unstableness of the primary servers (paragraph 0013, lines 1-5).

Harper teaches when at least one of the primary servers is judged unstable as a result of monitoring (paragraph 0013, lines 1-5), judging existence of one or more spare servers or one or more primary servers having spare capacity (paragraph 0013, lines 5-8, paragraph 0038 and Fig. 5A and 5B – there is a spare server present in the system of Harper), wherein each of the spare servers or the primary servers having spare capacity is able to function as either the spare server or the primary server (paragraphs 0012 and 0013 – the spare server takes over for the primary. It is therefore clear that the spare can function as a primary server. It is inherently necessary for a spare server to be able to function as a spare server).

Harper teaches when at least one of the spare servers or the primary servers having spare capacity exists (Fig. 5A and 5B), duplexing all processes of the unstable primary server to the spare server or the other primary server having spare capacity according to a currently set operation mode (paragraphs 0011, 0038 and 0039 – the secondary server has the application for failover already running and the state of the primary is transferred to the secondary such that the secondary is ready when necessary. The operation mode of the Harper reference is active/standby).

Harper teaches upon completing duplexing, providing the unstable server with a system rejuvenation control signal for executing rejuvenation (paragraphs 0050 and 0064 – the system is provided with a rejuvenation signal as an alternative to waiting for

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system failure. It is clear that this signal is provided only when duplexing is completed, otherwise the invention would not operate as intended).

Regarding claim 4:

Harper teaches when the current mode is set as the active/standby mode, selecting any of the spare servers (paragraphs 0011, 0038 and 0039 – the mode is active/standby. A server has clearly been selected to be the new primary server).

Harper teaches duplexing all the processes of the unstable primary server to the selected spare server (paragraphs 0011, 0038 and 0039 - the secondary server has the application for failover already running and the state of the primary is transferred to the secondary such that the secondary is ready when necessary).

Regarding claim 8:

Harper teaches system monitoring means for collecting system state information about the number of primary servers to grasp an unstable state of each of the servers (paragraphs 0011, lines 5-6, and 0013, lines 1-5).

Harper teaches cluster controlling means for providing a control signal for duplexing all processes of one of the number of primary servers to one of the number of spare servers or other primary server having spare capacity according to a currently set operation mode when the primary server is unstable as a result of system monitoring in said system monitoring means (paragraphs 0011, 0038 and 0039 – the secondary server has the application for failover already running and the state of the primary is

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transferred to the secondary such that the secondary is ready when necessary. The operation mode of the Harper reference is active/standby), wherein each of the spare servers or the primary servers having spare capacity is able to function as either the spare server or the primary server (paragraphs 0012 and 0013 – the spare server takes over for the primary. It is therefore clear that the spare can function as a primary server. It is inherently necessary for a spare server to be able to function as a spare server), and for providing the unstable primary server with a rejuvenation signal for system rejuvenation if the unstable primary server maintains an unstable system state for a certain time period (paragraphs 0050 and 0064 – the system is provided with a rejuvenation signal as an alternative to waiting for system failure. It is clear that this signal is provided only when duplexing is completed, otherwise the invention would not operate as intended).

Harper teaches duplexing means for duplexing all processes of the unstable primary server to the spare server or the other server having spare capacity according to a duplexing control signal about the set mode provided from said cluster controlling means (paragraphs 0011, 0038 and 0039 – the secondary server has the application for failover already running and the state of the primary is transferred to the secondary such that the secondary is ready when necessary. The operation mode of the Harper reference is active/standby.).

Regarding claim 9:

Harper teaches a system state information collecting block for monitoring a system state of each of the primary servers to collect state information from each of the primary servers (paragraphs 0011, lines 5-6, and 0013, lines 1-5).

Harper teaches a rejuvenation command producing block for judging existence of an unstable primary server according to system state information collected in said system state information collecting block, and when any of the primary servers is unstable, producing a rejuvenation command signal for rejuvenation of unstable software of the unstable primary server and providing the same to said duplexing means (paragraphs 0050 and 0064 – the system is provided with a rejuvenation signal as an alternative to waiting for system failure. It is clear that this signal is provided only when duplexing is completed, otherwise the invention would not operate as intended).

Regarding claim 11:

Harper teaches wherein said cluster controlling means includes registering means for canceling the unstable primary server from an available server list when the unstable primary server is duplexed to the spare server or the other primary server having spare capacity in said duplexing means, and upon completing rejuvenation of the unstable primary server according to the rejuvenation signal, re-registering the rejuvenation-completed primary server in the available server list (paragraph 0064 – the primary server is replaced by the secondary server and when the primary server has been rebooted it is added back to the list as the secondary server).

Regarding claim 14:

The claim is rejected as a record medium readable by a digital processing apparatus that contains programs that cause the method of claim 1 to be performed.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 6, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper et al. (2003/0036882 – hereinafter Harper (I)) in view of Harper et al. (6,629,266 – hereinafter Harper (II)).

Regarding claims 2 and 10:

The teachings of Harper (I) are outlined above.

Harper (I) does not explicitly teach wherein said system state information contains at least one of group including operational load, continuous running time,



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memory usage, buffer usage of the primary server. Harper (I) does, however, teach predicting failure based on state information collected from the primary server.

Harper (II) wherein said system state information contains at least one of an operational load, continuous running time, memory usage, buffer usage of the primary server in Fig. 1, 7, 9, 11, 12, col. 2 lines 31-34, col. 3 lines 47-52 and col. 4 lines 23-28.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Harper (I) with those of Harper (II).

One of ordinary skill in the art at the time of invention would have been motivated to make the combination because Harper (I) explicitly states a desire for the combination to be made in paragraphs 0001 and 0058.

Regarding claim 6:

The teachings of Harper (I) are outlined above.

Harper (I) does not explicitly teach judging whether to execute a rejuvenation command according to operational load and continuous running time of the primary server subjected to rejuvenation. Harper (I) does, however, teach executing a rejuvenation command.

Harper (II) judging whether to execute a rejuvenation command according to operational load and continuous running time of the primary server subjected to rejuvenation in Fig. 1, 7, 9, 11, 12, col. 2 lines 31-34, col. 3 lines 47-52 and col. 4 lines 23-28.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Harper (I) with those of Harper (II).

One of ordinary skill in the art at the time of invention would have been motivated to make the combination because Harper (I) explicitly states a desire for the combination to be made in paragraphs 0001 and 0058.

Regarding claim 7:

Harper (I) teaches wherein said rejuvenation of the primary server subjected to rejuvenation includes file system clearing, buffer clearing, memory clearing and restart in paragraphs 0063 and 0064. Rejuvenation includes rebooting and starting from a clean state, and such rebooting necessarily includes file system clearing, buffer clearing and memory clearing.

Claims 3, 5, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper et al. (2003/0036882) in view of Kumar et al. (6,789,213).

Regarding claims 3 and 12:

The teachings of Harper are outlined above.

Harper does not explicitly teach an active/active mode in which all of the servers constituting the cluster participate in service while mutually performing the role of the spare servers. Harper does, however, teach providing spare capacity in order to duplex processes in order to perform software rejuvenation.

Kumar teaches an active/active mode in which all of the servers constituting the cluster participate in service while mutually performing the role of the spare servers in col. 3 lines 1-12.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Harper with those of Kumar.

One of ordinary skill in the art at the time of invention would have been motivated to make the combination because Kumar teaches that the use of an active/active mode allows for controlled takeover without human intervention. Kumar further teaches that the implementation is cost effective and simplified, which meets an explicitly stated desire of Harper (see Harper, paragraph 0071).

Regarding claim 5:

The combination of Harper and Kumar teaches duplexing the processes of the unstable primary server to the selected primary server having spare capacity. Harper teaches duplexing the processes to an area of spare capacity in paragraphs 0011, 0038 and 0039. The combination with Kumar teaches the spare capacity being that provided by another primary server.

Regarding claim 13:

The teachings of Harper regarding the active/standby mode are outlined above.

The combination of Harper and Kumar teaches duplexing the processes of the unstable primary server to the selected primary server having spare capacity. Harper

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teaches duplexing the processes to an area of spare capacity in paragraphs 0011, 0038 and 0039. The combination with Kumar teaches the spare capacity being that provided by another primary server.

### ***Response to Arguments***

Applicant's arguments filed 2/13/06 have been fully considered but they are not persuasive.

In response to applicant's arguments concerning a previous office action, the examiner would like to note that the office action to which applicant refers was subsequently followed by four further office actions. The examiner also notes that the office action in question was prepared by a different examiner.

In response to applicant's argument that the claim amendments entered with the RCE meet some suggestion provided by the previous examiner and distinguish over the Harper references, the examiner respectfully disagrees. The passages from the previous office action that are reproduced in applicant's arguments deal with applicant's statement that applicant's invention is an (n,k) cluster and that applicant's invention operates without distinction between a primary and spare server. Without regard to the fact that the previous examiner never stated that such limitations would be considered allowable, only that they were not present in the claims, the present amendments still have not added such limitations to the claims. There is still no teaching of an (n,k) cluster. Applicant has merely added that there are one or more spare servers. The spare server of the Harper(I) reference clearly teaches one or more spare servers. In

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addition the fact that each of the spare servers or the primary servers with spare capacity can function as either the spare or the primary is also clearly taught by Harper (I) – see the above citations to the reference. The fact that there is a spare server that is used as a failover for the primary is a clear teaching of a spare that function as either a spare or a primary, given that it does, in fact, function as both depending on the failure state of the other computer. Thus, all limitations of the claims are still taught by the above-cited references.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc Duncan whose telephone number is 571-272-3646. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 571-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

md  
Marc Duncan

A handwritten signature in black ink, appearing to read 'Marc Duncan', with a long horizontal flourish extending to the right.